number, from 15 to 32 inclusive, and in all respects correspond to those on the male wing, except that most of them will contain 34 instead of 30 patients.

In connection with the wards and infirmaries are 21 spacious airing courts for patients.

Each gallery and dining space has three open fires, and, independently, all are warmed and ventilated by Mr. H. C. Price, of Westminster, with his Patent Flat Vessel Hot Water Apparatus. The towers surmounting the staircases at different parts of the building are ventilating towers with extracting shafts.

The extreme length of the building is 1,883 feet 8 inches, and it is said to be capable of accommodating from 1,200 to 1,300 patients,—a larger number, as it seems to us, than is generally desirable.

The galleries are boarded, vaulted with indented tiles, and are of great width and lightness. The corridors are paved with the metallic lava, and are also covered with it on the top. These corridors (seen in the view as blank arcades) are lighted by loop-holes filled with rough plate-glass; they will need additional ventilation we are disposed to think. Padded rooms, for refractory patients, are provided in some of the wards: the material used is vulcanised India-rubber.

The amount of the contract was 138,000*l.*, but the total expenditure, we are informed, will probably be nearly 200,000*l.*, various buildings having been erected which were not included in the first arrangement. The tenders as sent in were—

Jackson	£225,000
Jay	198,000
Myers	165,000

The last was ultimately reduced to the sum we have named.*

The asylum appears to us well-adapted for its purpose: the main objection to the plan seems to be the great distance from the kitchen and other offices at which some of the wards are placed.

SOME REMARKS ON THE CATHEDRAL AT BEAUVAIS.†

THE cathedral of Beauvais is of ancient origin, and some important remains of the primitive building, called Notre Dame de la Basse Œuvre, still exist at the west end of the present edifice. The striking feature of this cathedral, both in the exterior and in the interior, is its height: externally, it rises far above the houses and other buildings of the town, and internally, the astonishing height of the nave occasions more than the usual effect, which the vistas of all cathedrals produce on the mind of the beholder. The chief subject of interest to the architect is, however, to be found in the appearance which this building presents, of a near approach to the utmost limit of strength which the principle of its construction could afford. This is apparent on a cursory inspection, and still more so on a careful examination of the building. On looking at the arches of the choir, it appears that there were originally but three on each side, and that each of them has been subsequently divided into two: the outline of the original arches still remaining quite distinct. And although, in one or two instances, the space formed between the original arch and the two filling-in arches has been decorated by a circle, filled up with a quatrefoil, still this addition does not at all mask the original construction. The filling-in of each primary arch, forming it in two divisions, may also be observed in the arches separating the aisles and chapels; but it is not so distinctly traceable as in the main body of the choir. This examination is the more instructive, because the precise period in the construction of the building at which this filling-in became necessary, and the reasons for it, are on record.

It would indeed almost appear, by comparing the original construction with that of the neighbouring cathedral of Amiens, that the limits of strength were here exceeded; for, while at Amiens the distance from centre to centre of the piers is 23 feet 10 inches, at Beauvais it is 29 feet, and while the columns at Amiens, including the side shafts, measure 7 feet 2½ inches, those at Beauvais measure only 6 feet 8 inches, or 6 feet 9 inches. Moreover, the whole height of the vaulting at Amiens, is 140 feet 8 inches, and that at Beauvais is 158 feet, so that the difference in dimensions of the bearing surfaces of the span of the arches, and of the height of the superstructure, would lead to the conclusion, so far as it may be formed by a comparison of these examples, that at Amiens the limits of strength were nearly attained, and at Beauvais they were exceeded: possibly also, the stone of which Beauvais Cathedral is built, being only a *chalk stone*, may have had something to do with the alteration in the construction; as, although of a hard description, it is not able to offer the same resistance to a crushing weight as a more crystalline limestone, or a harder sandstone. Looking, however, to the present condition of the edifice, it does not appear that the defects seen in the buckling of the piers have arisen from any want of strength in the stone. Whatever may have been the cause, it appears that some time subsequent to the erection of the arches of the choir and aisles, it became necessary to strengthen the building, by introducing in the centre of each original arch a pier, corresponding in form with those already constructed. In order, however, that the filling-in pier may occupy as little space as possible, it is flattened on its axis; while, in other respects, it corresponds in plan with the original piers. These consist, as at Amiens, of circular shafts, with smaller single shafts attached and clustered round in the line of the longitudinal and transverse axis.

The church of which these original pillars formed a part, was built at the same time as the Cathedrals at Amiens and Salisbury,—viz., between the years 1249 and 1267. The choir was finished in 1272, but the failure in the construction took place within a century after that date; for before the year 1324, the additional piers were introduced, and the whole of the upper part of the church, including the triforium, was reconstructed. Besides the filling-in piers in the choir, the arches between the aisles and the side chapels were subdivided, and the vaulting of the aisles, which does not seem to have been rebuilt, or, if rebuilt, was rebuilt on the original plan, was strengthened partially between the filling-in piers by cross arches, with open spandrils and mouldings of a date evidently posterior to the arches of the choir and vaulting of the aisles. These cross arches, however, were not applied throughout the building.

At the level of the capitals of the piers all around the apsis, iron joggles are to be seen, which were apparently used for the purpose of tying the piers to the side walls of the aisles; but as the construction of this part of the building does not seem to have been altered, the utility of these joggles is not evident, unless they may have been found requisite during the construction of the chapels of later date, which were added between the buttresses. There are iron joggles at the same level over some of the other piers, and at the level of the top of the capitals of the piers dividing the aisles and chapels, which were probably used for the purpose already mentioned.

At present there appears to be some tendency in the piers to buckle, for in four places strong struts are now placed between the piers of the choir and those dividing the side aisles and chapels; but the most striking defect at present visible is in one of the piers between the aisles and side chapels on the north side of the church: this pier is evidently much bulged in, as though it were crushed by the weight of the heavy buttress pier over it, which connects the two series of flying buttresses. Except these defective parts, the strapping together some of the ribs of the vaulting, and some of the mullions of the upper windows, there is nothing which indicates any weakness or want of stability in the building.

After the failure of the vaulting there was, however, another notable failure in the central lantern, which fell in the year 1573, after it had been built about five years, and occasioned the rebuilding of the piers at the intersection of the choir and transept, and also one of the piers on the north side in the style of that date. One of the piers on the south side, between the aisles and chapels, was also rebuilt about this period; as the flamboyant character of these piers is carried up to the level of the bottom of the clerestory, above which the style of the thirteenth century remains unaltered.

On the spot where the present cathedral stands a building was commenced in 991: this was burnt in 1180: it was subsequently restored, and again totally destroyed by fire in 1225. Miles de Nanteuil, then bishop, hastened to begin the actual fabric in 1225, five years after the commencement of the works at Amiens. Guillaume de Gretz, the fifty-eighth bishop, caused the choir to be constructed in 1247; but according to Woillez, the piers of the building thus commenced being placed at too great a distance from each other, the vaulting fell in: however, it was restored as before, and entirely finished in 1272, at which period, we may assume, the iron ties, of which the traces are still very visible, were inserted. This attempt also proved unsuccessful, for the vaulting again fell in on the 29th of November, 1284; when the central walls, it is said, were pushed out, and several of the columns injured by the fall of the vaulting. The vaulting which actually exists was commenced in 1324, and it was at that time that the additional piers were introduced in the centre of the span of the three first arches on each side of the church, and the other arrangements were made for the strengthening of the building; but the whole of the work necessary for the completion of the choir, as we now see it, was not carried out until the middle of the sixteenth century. The transept was commenced under Villiers de l'Isle Adam, the seventy-seventh bishop, in the year 1500, and the works were continued until, in the time of the eighty-fourth bishop, the vaulting of this part of the building was completed. It was intended to extend the building by the addition of a nave, corresponding with the colossal dimensions of the existing choir and transepts; but during the latter years of its construction, funds were obtained with some difficulty, notwithstanding appeals to the royal bounty of Louis the Twelfth and Francis the First, after whose time the age for cathedral building had nearly passed away.

However, as a last and crowning effort, in 1560, two architects, wishing, it is said, to prove that the art they practised was capable of as mighty effects as the revived classic, constructed at the intersection of the choir and transept an octagonal spire, rising from a square base, with the upper part formed of wood. It has already been mentioned, that after standing only five years this spire fell, and caused much destruction, in the year 1573.

When this spire was complete, Beauvais cathedral could boast of being the loftiest building in Europe, and it equalled in height the great Pyramid of Egypt, being 445 feet high from the level of the ground to the summit. It seems probable that this magnificent spire might have remained in its integrity until our times, had not one of the four piers on which it rested been built hollow, to contain a staircase communicating with the spire; while the nave being then, as now, incomplete, did not afford sufficient abutment on the west side. The necessary repairs consequent on the fall of the tower were immediately commenced, and they were completed in 1575; but the spire was not rebuilt, and its place is occupied by a small bell turret. In 1604 all the works were definitively suspended, and

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* It may be useful to note that the average cost per patient of the following asylums was (exclusive of land) as follows:—

Devon	£115
Surrey	173
Hanwell	142
Maidstone	183
Irish asylums (average)	183

† From a paper, by Mr. Edward L'Anson, jun. Fellow, read at the Ordinary Meeting of the Institute of Architects, June 16th.

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